

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:**Claim 1 (cancelled)**

Claim 2 (currently amended): A method of forming a semiconductor integrated circuit dielectric composite film, the method comprising:

forming a dielectric matrix film on a semiconductor wafer; and
distributing a reinforcing material comprising nanostructure whiskers throughout the dielectric matrix film to form the dielectric composite film wherein said nanostructure whiskers have a length dimension of less than about 100 nanometers.

Claim 3 (previously presented): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the dielectric matrix film is selected from the group consisting of SiO₂ and low-k dielectric layers.

Claim 4 (previously presented): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the reinforcing material is distributed simultaneously with the formation of the low-k dielectric matrix film using a CVD method.

Claim 5 (cancelled).

Claim 6 (original): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the whiskers are rod-shaped and have a length in the range from 5 to 20 nm.

Claim 7 (original): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the whiskers have aspect ratios in the range of 5:1 to 300:1.

Claim 8 (original): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the whiskers are randomly oriented.

Claim 9 (original): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the volume of the whiskers in relation to the volume of the matrix material lies in the range from 0.1 to 10 %.

Claim 10 (original): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the whiskers comprise one of SiC, Si₃N₄, and SiO₂, and diamond structured whiskers.

Claim 11 (original): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the reinforcement whiskers are formed in the composite layer by suspending the whiskers in a spin-on liquid.

Claim 12 (previously presented): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 further comprising heating the dielectric matrix film to vaporize volatile components.

Claim 13 (previously presented): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 further comprising etching dielectric matrix film to selectively remove a portion of the dielectric film matrix leaving a cross-linked structure comprising the reinforcing material.

Claim 14 (original): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the whiskers are single crystal nano-structures.

Claim 15 (original): The method of forming a semiconductor integrated circuit dielectric composite film as recited in claim 2 wherein the whiskers have a bipolar structure and further comprising applying a field to the dielectric composite film to orient the whiskers in a predetermined orientation.

Claim 16 (previously presented): The method as recited in claim 2 further comprising forming an inlaid conductive layer in the low-k composite layer.

Claim 17 (original): The method as recited in claim 16 wherein the inlaid copper layer is a copper dual-damascene interconnect structure.

Claim 18 (cancelled)

Claim 19 (cancelled).

Claim 20 (cancelled)

Claim 21 (currently amended): A dielectric composite film comprising:
a low-k dielectric matrix film; and
whisker reinforcements distributed throughout the film wherein the whisker reinforcements are selected from the group consisting of SiC, Si₃N₄, oxides, polymers, and diamond structured materials wherein the whiskers occupy a volume in the matrix in the range of 0.1 to 10% and wherein the whiskers have a length of less than about 100 nanometers.

Claim 22 (previously presented): A dielectric composite film comprising:

a low-k dielectric matrix film; and

whisker reinforcements distributed throughout the film wherein the whisker reinforcements are selected from the group consisting of SiC, Si₃N₄, oxides, polymers, and diamond structured materials wherein the whiskers comprise rod shaped whiskers having a length of in the range of about 1 to about 50 nanometers and a cross-section of on the order of about 0.1 to about 5 nanometers.

Claim 23 (previously presented): A method of forming a semiconductor integrated circuit dielectric composite film, the method comprising:

forming a dielectric matrix film on a semiconductor wafer; and

distributing a reinforcing material comprising one of fibers and nanostructure whiskers throughout the dielectric matrix film to form the dielectric composite film wherein the reinforcing material is distributed simultaneously with the formation of the low-k dielectric matrix film using a CVD method.

Claim 24 (previously presented): A method of forming a semiconductor integrated circuit dielectric composite film, the method comprising:

forming a dielectric matrix film on a semiconductor wafer;

distributing a reinforcing material comprising one of fibers and nanostructure whiskers throughout the dielectric matrix film to form the dielectric composite film; and

heating the dielectric matrix film to vaporize volatile components thereby increasing the porosity of the dielectric matrix film to lower the k value of the dielectric matrix film.